

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

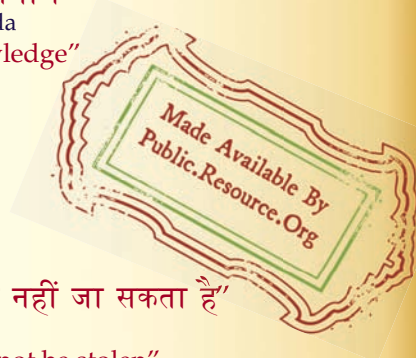
IS 15481-1 (2004): Wireline Diamond Core Drilling Equipment
- System A, Part 1: Mertric Units [MED 21: Diamond Core and
Waterwell Drilling]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक
वायरलाईन हीरक क्रोड वेधन उपस्कर — पद्धति ए
भाग 1 मीटरी इकाइयाँ

Indian Standard
**WIRELINE DIAMOND CORE DRILLING
EQUIPMENT — SYSTEM A
PART 1 METRIC UNITS**

ICS 73.100.30

© BIS 2004
BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 2004

Price Group 6

NATIONAL FOREWORD

This Indian Standard (Part 1) which is identical with ISO 10097-1 : 1999 'Wireline diamond core drilling equipment — System A — Part 1 : Metric units' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Diamond Core and Water Well Drilling Sectional Committee and approval by the Mechanical Engineering Division Council.

The text of the ISO Standard has been approved as a suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

ISO 10097 consists of the following parts, under the general title Wireline diamond core drilling equipment — System A:

- Part 1 Metric units
- Part 2 Inch units

In India, as we use only metric system, the concerned sectional committee has decided to adopt only Part 1 of ISO 10097.

The concerned Technical Committee has reviewed the provisions of ISO 3351-1:1992 referred in this standard and has decided that it is acceptable for use in conjunction with this standard.

Annex A of this standard is for information only.

Indian Standard
**WIRELINE DIAMOND CORE DRILLING
EQUIPMENT — SYSTEM A**
PART 1 METRIC UNITS

1 Scope

This part of ISO 10097 specifies the nomenclature and the leading dimensions necessary for the interchangeability of the following wireline drilling equipment for drilling holes 48 mm to 96 mm in diameter, yielding cores of 27 mm to 63 mm in diameter.

The equipment is illustrated in Figure 1 and comprises the following:

- a) core bit;
- b) reaming shell;
- c) core lifter;
- d) core lifter case;
- e) outer tube;
- f) inner tube;
- g) drill rod (smooth pipe only).

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 10097. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this part of ISO 10097 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3551-1:1992, *Rotary core diamond drilling equipment — System A — Part 1: Metric units.*

3 Designation

Items made in accordance with this part of ISO 10097 shall be designated by the identification letters WL and hole dimensions A, B, N, H.

EXAMPLE

Core bit for wireline drilling hole B dimensions: WLB core bit.

4 Materials

Materials used in the manufacture of the wireline drilling equipment specified in this part of ISO 10097 shall have the minimum mechanical properties as specified in Table 1.

Table 1 — Mechanical properties

Component	Minimum tensile strength, R_m N/mm ² (MPa)	Minimum yield stress, R_e N/mm ² (MPa)	Minimum elongation after fracture, A %
Drill rods	690	550	12
Core tubes	690	550	12
Other items	Not specified		

5 Dimensions and tolerances

5.1 General

All dimensions and tolerances are in millimetres unless otherwise stated and shall be in accordance with Tables 3 to 9 inclusive.

5.2 Conformity

In those industries where drilling depths are measured in metres, the rod lengths shall be 3 m, 1,5 m or 0,75 m. But when drilling in conformity with DCDMA and CDDA standards, the lengths of rods may be 3,048 m, 1,524 m or 0,762 m.

5.3 Eccentricity

The eccentricity is defined as the distance between the centres of the outer and inner diameters and may not exceed 10 % of nominal wall thickness Q .

The eccentricity is calculated according to the formula:

$$\frac{Q_{\max} - Q_{\min}}{2Q_{\text{nom}}} \times 100$$

where $Q_{\max}$ and $Q_{\min}$ are measured values in the same section.

5.4 Straightness

When measured over the whole length of the tube by rolling against a straightedge, the maximum deviation shall not be greater than:

- for drill rods 1 in 2 000
- for core tubes 1 in 1 500.

5.5 Technical conditions

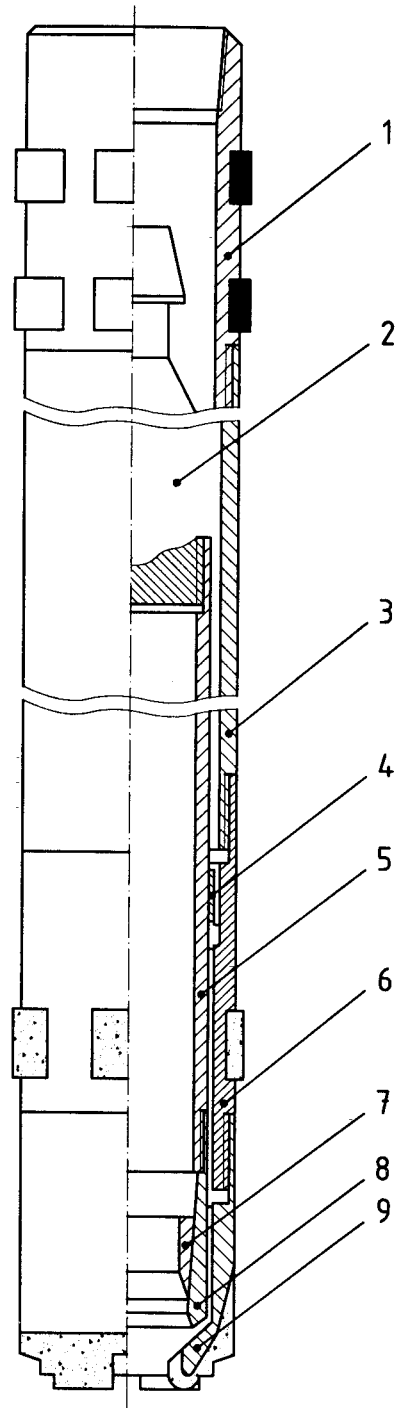
Tubes should be made seamless. Tube rolling technique and machining operations are optional.

Tube straightness is checked by rolling the tube on a horizontal or slightly inclined flat surface. When rolling, no clearances shall be seen between the rod ends and the surface, nor between the middle of the rod (tube) and the surface.

Hole drilling by wireline system A equipment shall be cased by system A casing as specified in ISO 3551-1.

Table 2 — System of dimensional identification letters

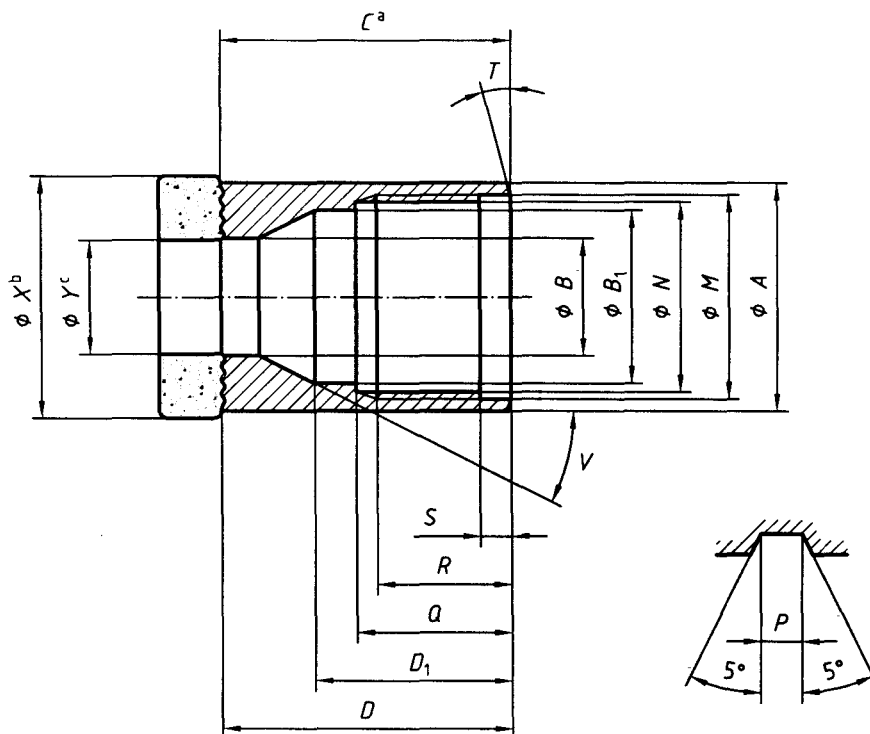
<i>A, A₁, etc.</i>	Outside diameters; <i>A</i> being largest; <i>A₁, A₂, etc.</i> progressively smaller
<i>B, B₁, etc.</i>	Inside diameters; <i>B</i> being smallest; <i>B₁, B₂, etc.</i> progressively larger
<i>C, C₁, etc.</i>	External lengths; <i>C</i> being longest; <i>C₁, C₂, etc.</i> progressively shorter
<i>D, D₁, etc.</i>	Internal lengths; <i>D</i> being longest; <i>D₁, D₂, etc.</i> progressively shorter
<i>E, E₁, etc.</i>	Major diameter of pin threads; <i>E</i> being largest; <i>E₁, E₂, etc.</i> smaller
<i>F, F₁, etc.</i>	Minor diameter of pin threads; <i>F</i> being largest; <i>F₁, F₂, etc.</i> smaller
Thread pitch (threads per inch)	Pin threads
<i>G, G₁, etc.</i>	Width at root of pin thread
<i>H, H₁, etc.</i>	Length of o.d. machined for external threading
<i>J, J₁, etc.</i>	Minimum length for full depth of pin threads
<i>K, K₁, etc.</i>	Length of relief at the starting point of pin threads
<i>L, L₁, etc.</i>	Angle of bevel for pin thread shoulder
<i>M, M₁, etc.</i>	Major diameter of box threads; <i>M</i> being largest; <i>M₁, M₂, etc.</i> smaller
<i>N, N₁, etc.</i>	Minor diameter of box; <i>N</i> being largest; <i>N₁, N₂, etc.</i> smaller
Thread pitch (threads per inch)	Box threads
<i>P, P₁, etc.</i>	Width at root of box threads
<i>Q, Q₁, etc.</i>	Length of i.d. machined for internal threading
<i>R, R₁, etc.</i>	Minimum length for full depth of box threads
<i>S, S₁, etc.</i>	Length of counter bore at the starting of box threads
<i>T, T₁, etc.</i>	Angle of bevel for thread shoulder
<i>U, U₁, etc.</i>	Included angles: Internal and external
<i>V, V₁, etc.</i>	Internal angles, not pertaining to threaded connections
<i>W, W₁, etc.</i>	External angles, not pertaining to threaded connections
<i>X</i>	Diamond set dimensions: External (o.d.)
<i>Y</i>	Diamond set dimensions: Internal (i.d.)
NOTE 1 All decimal dimensions indicate allowable tolerances.	
NOTE 2 The following common abbreviations have sometimes been used in tables in the English version for the sake of simplicity: o.d = outside diameter i.d. = inside diameter.	



Key

- | | | | |
|---|---------------------------------|---|------------------|
| 1 | Head (not standardized) | 6 | Reaming shell |
| 2 | Bearing unit (not standardized) | 7 | Core lifter |
| 3 | Outer core barrel | 8 | Core lifter case |
| 4 | Stabilizer (not standardized) | 9 | Bit |
| 5 | Retractable core barrel | | |

Figure 1 — Wireline core barrel assembly

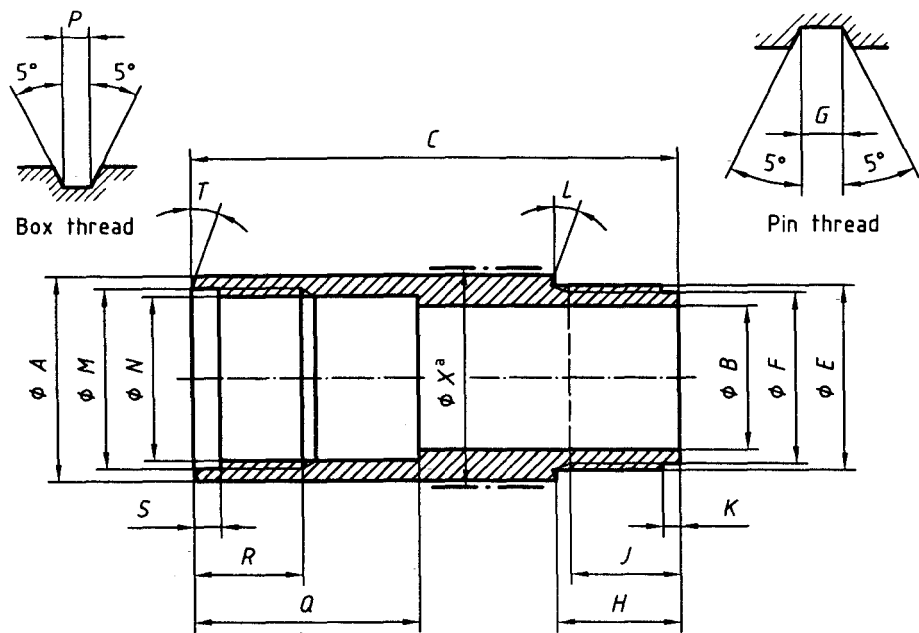


- a Clear of diamonds
b Set o.d.
c Set i.d.

Figure 2 — Wireline core bit

Table 3 — Wireline core bit (see Figure 2)

Dimension		WLA	WLB	WLN	WLH
A	max.	46,66	57,96	73,91	94,31
	min.	46,56	57,86	73,81	94,21
B	max.	27,89	37,70	48,82	64,69
	min.	27,76	36,91	48,02	63,90
B ₁	max.	36,91	46,43	60,72	78,18
	min.	36,12	45,64	59,93	77,39
C	min.	57,91	66,04	65,41	96,22
D	max.	58,71	66,83	66,20	97,01
	min.	57,91	66,04	65,41	96,22
D ₁	max.	49,61	57,55	54,37	83,74
	min.	48,82	56,75	53,58	82,95
M	max.	42,09	52,43	67,51	85,78
	min.	42,04	52,37	67,46	85,70
N	max.	40,59	50,85	65,99	84,20
	min.	40,51	50,80	65,94	84,12
Thread pitch		6,35	6,35	6,35	6,35
P	max.	3,20	3,20	3,20	3,20
	min.	3,12	3,12	3,12	3,12
Q	max.	42,29	42,52	42,55	42,75
	min.	42,16	42,39	42,42	42,62
R	min.	38,89	38,89	38,89	38,89
S	max.	7,14	7,14	7,14	7,14
	min.	6,35	6,35	6,35	6,35
T		15°	15°	15°	15°
V		30°	30°	30°	30°
X	max.	47,75	59,69	75,44	95,76
	min.	47,50	59,44	75,18	95,38
Y	max.	27,10	36,53	47,75	63,63
	min.	26,85	36,27	47,50	63,37

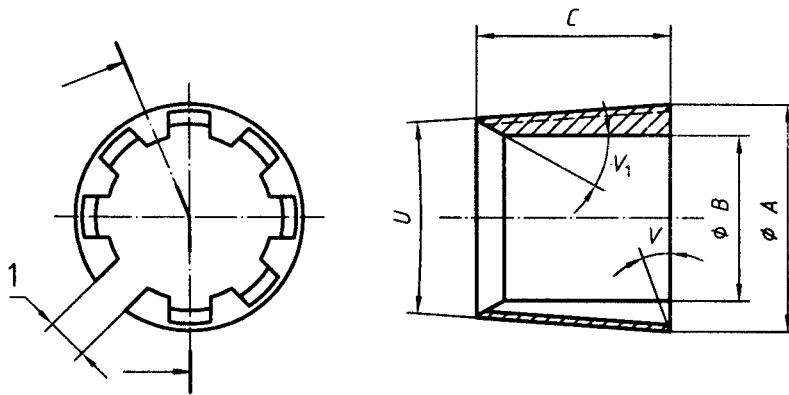


a Set o.d.

Figure 3 — Wireline reaming shell

Table 4 — Wireline reaming shell (see Figure 3)

Dimension		WLA	WLB	WLN	WLH
A	max.	46,66	57,96	73,91	94,31
	min.	46,56	57,86	73,81	94,21
B	max.	36,51	46,04	60,33	77,79
	min.	36,36	45,86	60,12	77,53
C	max.	162,32	159,15	171,85	182,96
	min.	161,53	158,35	171,05	182,17
E	max.	41,96	52,30	67,39	85,62
	min.	41,91	52,25	67,34	85,55
F	max.	40,44	50,72	65,86	84,05
	min.	40,39	50,67	65,81	83,97
Thread pitch		6,35	6,35	6,35	6,35
G	max.	3,20	3,20	3,20	3,20
	min.	3,12	3,12	3,12	3,12
H	max.	41,28	41,38	41,28	41,20
	min.	41,15	41,25	41,15	41,07
J	min.	38,89	38,89	38,89	38,89
K	max.	7,14	7,14	7,14	7,14
	min.	6,35	6,35	6,35	6,35
L		15°	15°	15°	15°
M	max.	42,09	52,43	67,51	85,78
	min.	42,04	52,37	67,46	85,70
N	max.	40,59	50,85	65,99	84,20
	min.	40,51	50,80	65,94	84,12
Thread pitch		6,35	6,35	6,35	6,35
P	max.	3,20	3,20	3,20	3,20
	min.	3,12	3,12	3,12	3,12
Q	max.	61,01	61,32	67,69	74,04
	min.	60,88	61,19	67,56	73,91
R	min.	38,89	38,89	38,89	38,89
S	max.	7,14	7,14	7,14	7,14
	min.	6,35	6,35	6,35	6,35
T		15°	15°	15°	15°
X	max.	48,13	60,07	75,82	96,27
	min.	47,88	59,82	75,57	95,89



Key

1 Gap

Figure 4 — Wireline core lifter

Table 5 — Wireline core lifter (see Figure 4)

Dimension		WLA	WLB	WLN	WLH
A	max.	30,23	40,23	52,04	68,94
	min.	30,18	40,18	51,99	68,88
B	max.	26,59	36,02	47,12	62,87
	min.	26,54	35,97	47,07	62,81
C	max.	22,62	25,80	28,97	38,50
	min.	21,83	25,00	28,18	37,70
U	max.	5° to 15'	5° to 15'	5° to 15'	5° to 15'
	min.	4° to 45'	4° to 45'	4° to 45'	4° to 45'
V		0°	0°	0°	0°
V ₁		30°	30°	30°	30°

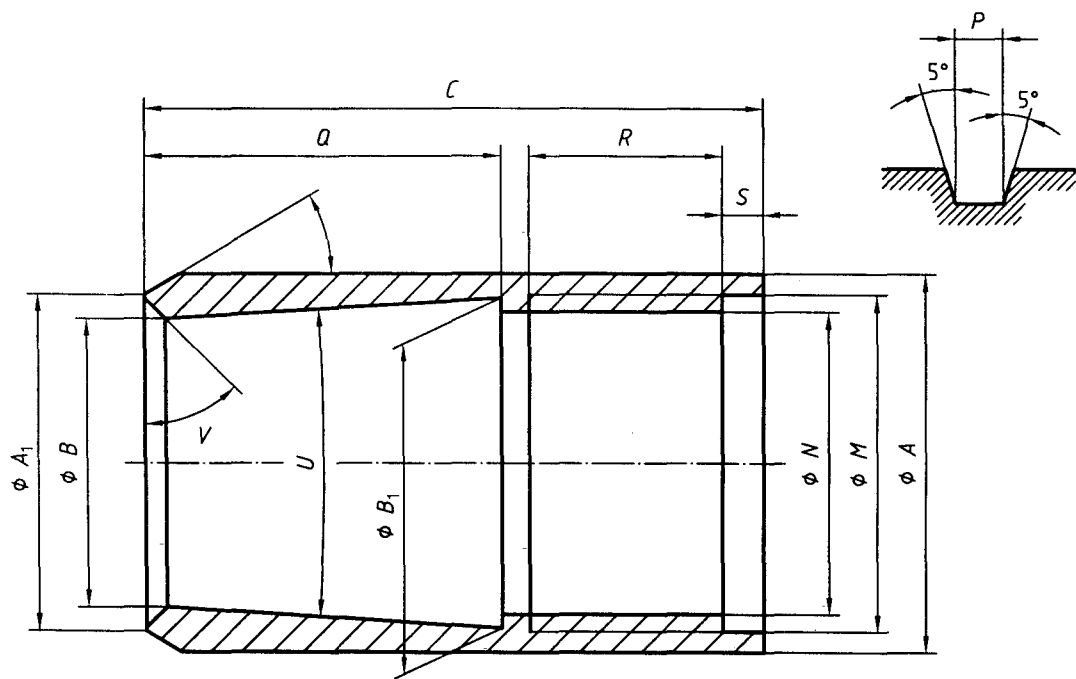


Figure 5 — Wireline core lifter case

Table 6 — Wireline core lifter case (see Figure 5)

Dimension		WLA	WLB	WLN	WLH
A	max.	32,94	43,00	55,93	73,23
	min.	32,89	42,95	55,88	73,18
A ₁	max.	30,68	40,41	52,73	67,99
	min.	30,63	40,35	52,68	67,94
B	max.	28,30	38,02	49,56	65,61
	min.	28,24	37,97	49,50	65,56
B ₁	max.	31,09	41,43	53,21	70,38
	min.	31,01	41,33	53,14	70,31
C	max.	63,90	70,25	75,01	89,30
	min.	63,10	69,45	74,22	88,50
M	max.	31,32	41,10	53,47	70,69
	min.	31,27	41,05	53,42	70,64
N	max.	30,18	39,93	52,20	69,29
	min.	30,12	39,88	52,15	69,24
Thread pitch		3,175	3,175	3,175	3,175
P	max.	1,63	1,63	1,63	1,63
	min.	1,55	1,55	1,55	1,55
Q	max.	40,08	44,85	51,59	67,07
	min.	39,29	44,05	50,80	66,28
R	min.	20,64	20,64	20,64	20,64
S	max.	3,97	3,97	3,97	3,97
	min.	3,18	3,18	3,18	3,18
T		30°	30°	30°	30°
U	max.	5° to 15'	5° to 15'	5° to 15'	5° to 15'
	min.	4° to 45'	4° to 45'	4° to 45'	4° to 45'
V		45°	45°	45°	45°

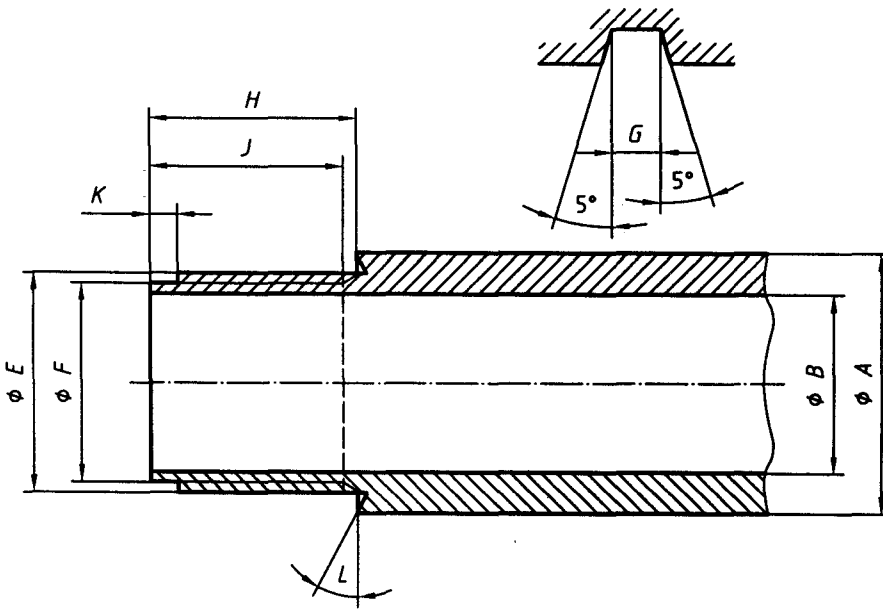


Figure 6 — Wireline core barrel outer tube (lower end)

Table 7 — Wireline outer tube (lower end) (see Figure 6)

Dimension		WLA	WLB	WLN	WLH
A	max.	46,19	57,33	73,23	92,33
	min.	46,04	57,15	73,03	92,08
B	max.	36,51	46,04	60,53	77,79
	min.	36,36	45,86	60,33	77,53
E	max.	41,96	52,30	67,39	85,62
	min.	41,91	52,25	67,34	85,55
F	max.	40,44	50,72	65,86	84,05
	min.	40,39	50,67	65,81	83,97
Thread pitch		6,35	6,35	6,35	6,35
G	max.	3,20	3,20	3,20	3,20
	min.	3,12	3,12	3,12	3,12
H	max.	41,28	41,48	41,38	41,28
	min.	41,15	41,35	41,25	41,15
J	min.	38,89	38,89	38,89	38,89
K	max.	7,14	7,14	7,14	7,14
	min.	6,35	6,35	6,35	6,35
L	min.	15°	15°	15°	15°

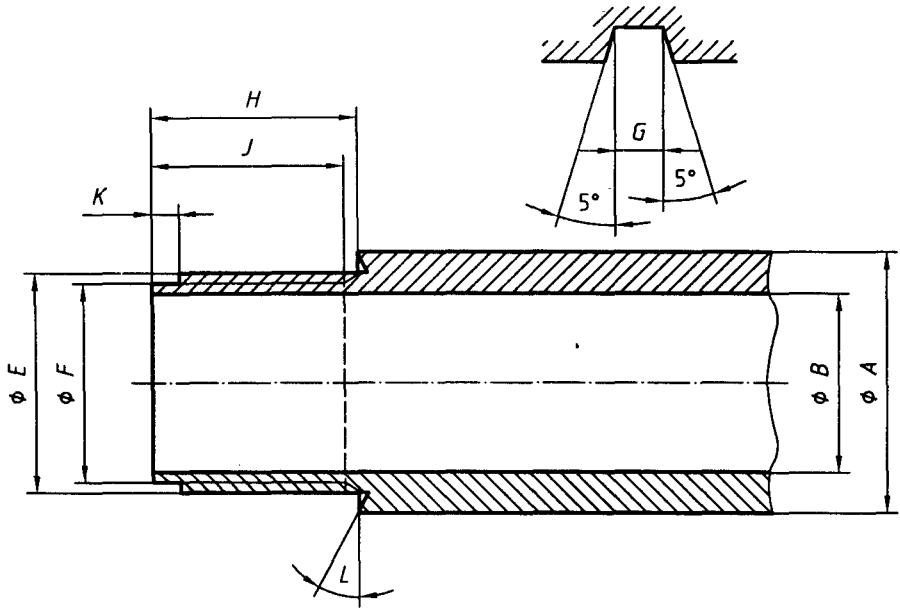


Figure 7 — Wireline core barrel inner tube (lower end)

Table 8 — Wireline core barrel inner tube, lower end

Dimension		WLA	WLB	WLN	WLH
A	max.	32,67	42,99	55,74	73,23
	min.	32,54	42,86	55,56	73,03
B	max.	28,58	38,10	50,01	66,93
	min.	28,45	37,97	49,83	66,73
E	max.	31,24	40,97	53,34	70,56
	min.	31,19	40,92	53,29	70,51
F	max.	30,07	39,80	52,07	69,16
	min.	30,02	39,75	52,02	69,11
Thread pitch		3,175	3,175	3,175	3,175
G	max.	1,63	1,63	1,63	1,63
	min.	1,55	1,55	1,55	1,55
H	max.	22,10	22,10	22,10	22,10
	min.	21,97	21,97	21,97	21,97
J	min.	20,64	20,64	20,64	20,64
K	max.	3,97	3,97	3,97	3,97
	min.	3,18	3,18	3,18	3,18
L	min.	0°	0°	0°	0°

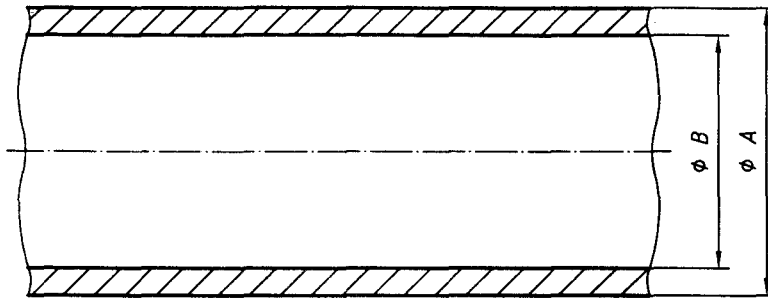


Figure 8 — Drill rod (smooth pipe)

Table 9 — Drill rod, smooth pipe (see Figure 8)

Dimension		WLA	WLB	WLN	WLH
<i>A</i>	max.	44,60	55,75	70,05	89,15
	min.	44,45	55,58	69,85	88,90
<i>B</i>	max.	35,08	46,20	60,33	78,00
	min.	34,93	46,02	60,12	77,77

NOTE Further details are given in annex A.

Annex A (informative)

Principal dimensions of drill rod threads

Dimensions	WLA	WLB	WLN	WLH
Thread tapering	1:28,64	1:28,64	1:28,64	2:28,64
Angle of thread arrival	1°	1°	1°	1°
Angle of thread profil	29°	29°	29°	29°
Thread pitch	6,350	8,466	8,466	8,466
Maximum outside diameter of box thread in stop batt axis	41,325	52,125	66,425	84,655
Maximum outside diameter of box thread in stop shoulder axis	39,805	50,595	64,895	83,135
Mean spire depth of box thread	0,752	0,785	0,785	0,785
Width at root of box thread	3,00	4,06	4,06	4,06
Mean length of box thread from stop batt to internal angle of stop shoulder	41,8	44,9	44,9	45,0
Minimum length for full depth of box thread	39,7	43,3	43,3	43,3
Minimum inside diameter of pin thread in stop batt axis	38,18	48,84	63,12	81,38
Minimum inside diameter of pin thread in shoulder axis	39,80	50,47	64,74	83,01
Mean spire depth of pin thread	0,740	0,800	0,800	0,800
Width at root of pin thread	3,00	4,06	4,06	4,06
Mean length of pin thread from stop batt to external angle of stop shoulder	41,3	44,4	44,4	44,4
Minimum length for full depth of pin thread	39,7	43,7	43,7	43,7
Angles of bevel for thread stop battes and stop shoulders	15°	15°	15°	15°
NOTE Many dimensions are approximate.				

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publication), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. MED 21 (0698).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 2323 7617
{ 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi
KOLKATA 700054

{ 2337 8499, 2337 8561
{ 2337 8626, 2337 9120

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 3843
{ 60 9285

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113

{ 2254 1216, 2254 1442
{ 2254 2519, 2254 2315

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093

{ 2832 9295, 2832 7858
{ 2832 7891, 2832 7892

Branches : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD.
GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR.
NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.